Ludden Lake, Iowa County
2013 Comprehensive Fisheries Survey

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Introduction

The Wisconsin Department of Natural Resources Fisheries Management staff conducted a comprehensive fisheries survey on Ludden Lake in the spring of 2013. The purpose of the survey was to sample the gamefish and panfish populations for relative abundance and size structure. The survey targeted all gamefish and panfish species. In addition, a mark and recapture population estimate was completed for walleye. Walleye, black crappie, bluegill sunfish, channel catfish, and common carp were the most abundant species sampled. Other species present included largemouth bass, hybrid bluegill, green sunfish, smallmouth bass, and white sucker.

Location

Ludden Lake (WBIC: 927900) is located in south-central Iowa County, T2NR5E, sections 25 and 36. Located in the township of Mineral Point just west of the city of Mineral Point, it is an impoundment of the Mineral Point Branch (WBIC: 930700). Constructed in 1963, it was developed as a local recreational opportunity and residential development project. While a majority of the shoreline is private with no access to the public, there is one public boat launch and shore fishing area located on the northwest side of the lake. It can be accessed via Ludden Lake Road as it approaches the golf course.

Physical Characteristics

Sediment deposits from the Mineral Point Branch watershed have helped change the physical characteristics of Ludden Lake over the years. Earliest recorded measurements were in 1965. Sedimentation has led to the decrease of surface area, maximum depth, and miles of shoreline (Table 1). Aquatic vegetation is limited with a minimal amount of aquatic macrophytes located in the back of the bays and near the mouth of the Mineral Point Branch as it enters the lake.

Table 1. Surface area, maximum depth, and miles of shoreline for Ludden Lake in 1965 and 2013.

	2013	1965
Surface Area (acres)	**47**	**70**
Maximum Depth (feet)	**10**	**14**
Miles of Shoreline	**1.86**	**2.3**

Stocking

Ludden Lake remains on the statewide quotas to receive an annual stocking of 1,105 small fingerling walleye. The walleye are stocked by the Wisconsin Departement of Natural Resources from the Lake Mills hatchery. These stocked fish are surviving and creating a recreational opportunity for walleye in Ludden Lake.

The Ludden Lake association has also purchased fish for stocking. In 2007, 250 smallmouth bass small fingerlings and 450 channel catfish small fingerlings were purchased for stocking. In 2006 and 2013 surplus walleye fry from Gollon Bait and Fish farm were donated to the lake association for stocking. Recent stocking records are listed in table 2.

Table 2. Stocking history of Ludden Lake from 2006 thru 2013

Species	Year	Size	Number Stocked	Source
Walleye	2006	Small fingerling	4,000	WDNR
Walleye	2006	Fry	89,000	Private
Smallmouth Bass	2007	Small fingerling	250	Private
Channel catfish	2007	Small fingerling	450	Private
Walleye	2009	Small fingerling	1015	WDNR
Walleye	2010	Small fingerling	670	WDNR
Walleye	2011	Small fingerling	1015	WDNR
Walleye	2012	Small fingerling	1015	WDNR
Walleye	2013	Small fingerling	1015	WDNR
Walleye	2013	Fry	50,000	Private

Methods

Ice out for Ludden Lake was April 8. Four fyke nets were set on April 10. The fyke nets have a frame measuring 4 feet high and 6 feet wide with a ¾ inch bar mesh. The nets were pulled on April 16 for a total effort of 24 net nights. Because of their adequate sample size black crappie and bluegill sunfish had total efforts of 4 and 16 net nights respectively. Net locations are listed in table 3.

Table 3. Latitude and longitude coordinates of fyke nets during Ludden Lake survey

Net number	Latitude	Longitude
1	42.87622	90.20126
2	42.87133	90.1997
3	42.87265	90.19954
4	42.87561	90.19856

During the fyke net survey length to the nearest tenth of an inch was recorded for all gamefish and panfish up to 250 individuals. Mature walleye were marked using a right pectoral fin clip. Immature walleye were marked using a right pectoral clip along with a top caudal clip. A single census Peterson mark and recapture population estimate was conducted for walleye. The equation used was N=MC/R where N is the estimated population at time of marking, M is the number of marked fish, C is the number of fish captured for census, and R is the number of recapture marks in the sample.

A recapture run (Spring Electrofishing I) was conducted on April 16 using an 18 foot boom electrofishing boat with dual rings (6 droppers per ring). Current was pulsed DC with a duty cycle of 25 and pulse rate of 40. Volts measured 320 and amps 24. Where navigable, the shoreline was sampled twice for a total effort of 115 minutes and 2.83 miles.

During the electrofishing survey only gamefish were collected. Length to the nearest tenth of an inch was recorded for all fish collected. Walleye were examined and recorded for recapture fin clips. Due to the low number of fish, walleye were able to be kept in a holding tank during the entire electrofishing effort to prevent same night recaptures.

On May 20, a spring electrofishing II survey for centrarchid species was conducted using the same 18 foot boom electrofishing boat with dual rings (6 droppers per ring). Current was pulsed DC with a duty cycle of 25 and pulse rate of 40. Volts measured 300 and amps 21.5. The entire shoreline was sampled once for a total effort of 91 minutes and 1.4 miles. Because of the high turbidity and high conductivity the number of fish collected was not sufficient and this report will only summarize that catch (Table 5).

Results and Discussion

Summary of catch

Walleye, black crappie, bluegill sunfish, channel catfish, and common carp were the most abundant species sampled. Other species present included largemouth bass, hybrid bluegill, green sunfish, smallmouth bass, and white sucker. (Table 4.)

Table 4. Spring fyke net and electrofishing I catch summaries of seven fish species sampled from Ludden Lake during the spring of 2013.

Species	Spring Fyke Netting Number Collected	Netting CPUE number/net night	Spring Electrofishing I Number Collected	Electrofishing CPUE Number/Mile
Walleye	91	3.8	27	19.3
Channel catfish	105	4.4	-	-
Black Crappie	346*	86.5	-	-
Bluegill sunfish	253*	15.8	-	-
Largemouth bass	16	0.7	3	2.1
Smallmouth bass	0	0	0	0
Green sunfish	0	0	-	-

*Netting effort for black crappie was 4 net nights. Bluegill netting effort was 16 net nights.

Table 5. Catch summary of Centrarchid species during the spring electrofishing II run completed on May 20, 2013.

Species	Number Collected	CPUE Number/Mile	CPUE Number/Hour	Minimum Size	Maximum Size	Mean Size
Bluegill sunfish	24	17.1	16	4.8	7.3	5.9
Black Crappie	10	7.1	6.7	3.4	9.7	6.8
Largemouth Bass	2	1.5	1.3	14.2	15.4	14.8

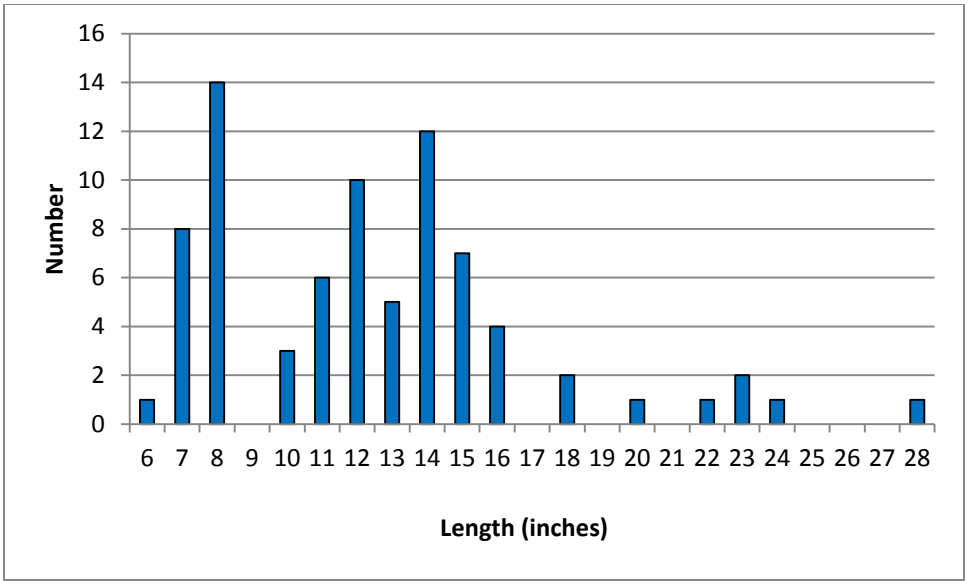
Walleye

During the fyke net survey there were 91 walleye sampled for a catch per effort of 3.8 walleye per net night. Total length ranged from 6.5 to 28.0 inches with a mean of 13.6 inches. Walleye greater than 15 inches total length, made up 38% of the total number of walleye 10 inches or greater. Length frequency of walleye sampled during the fyke net survey is displayed in Figure 1.

The electrofishing recapture run sampled 27 walleye for a catch per efforts of 9.5 walleye per mile and 14.1 per hour. Total length ranged from 7.3 to 21.7 inches with a mean of 11.3 inches. There were only 8 recaptures from the electrofishing recapture run.

The mark and recapture population estimates were 260 (5.5 per acre) for all sizes of walleye, 98 (2.0 per acre) for walleye greater than 12 inches, and 30 (0.63 per acre) for walleye measuring greater than 15 inches. There were not sufficient numbers of walleye greater than 18 inches to generate a population estimate for those length groups.

Figure 1. Length frequency of walleye, 2013 fyke net survey, Ludden Lake, Iowa County



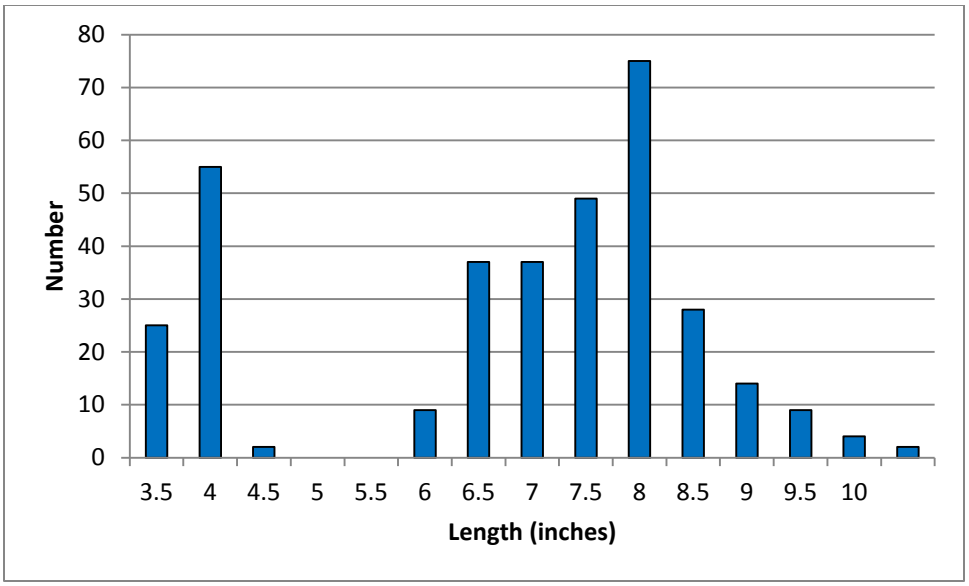
Largemouth bass

During the fyke net survey there were only 16 largemouth bass sampled for a catch per effort of 0.66 largemouth bass per net night. Total length ranged from 4.2 to 15.8 inches with a mean of 11.1 inches. The electrofishing recapture run sampled only 3 largemouth bass for a catch per efforts of 1.1 largemouth bass per mile and 1.6 per hour. Total length ranged from 9.2 to 12.9 inches with a mean of 10.9 inches.

Black crappie

During the fyke net survey we measured 346 black crappie. This number was obtained after one night of sampling for a total effort of 4 net nights. Catch per effort for black crappie sampled was 87 black crappie per net night. Total length ranged from 3.1 to 10.2 inches with a mean of 6.5 inches. Black crappie greater than 7.5 inches total length, made up 50% of the total number of crappies which were 5 inches or greater. Length frequency of the black crappie sampled is displayed in Figure 2. Black Crappies were not collected during the April 26 electrofishing survey.

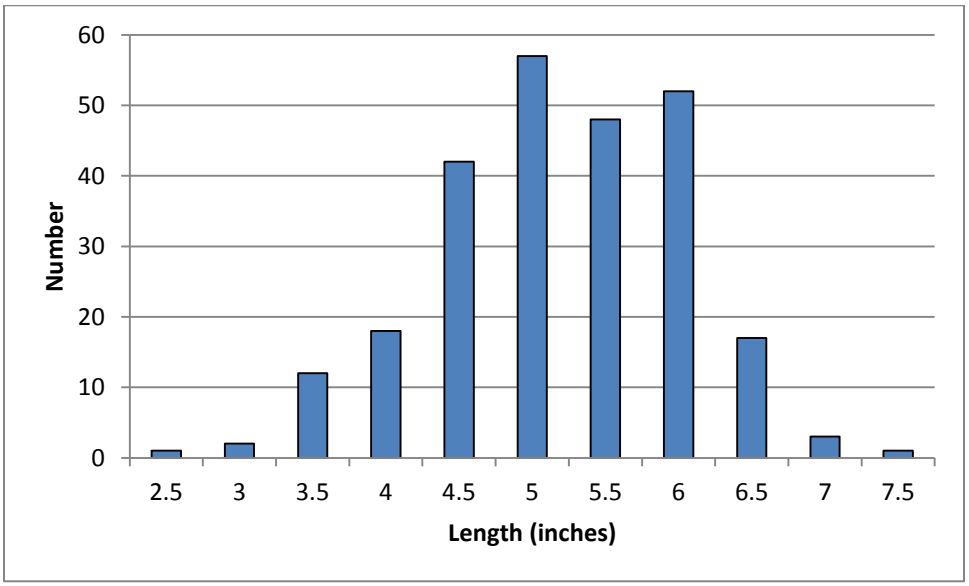
Figure 2. Length frequency of black crappie, 2013 fyke net survey, Ludden Lake, Iowa County



Bluegill sunfish

During the fyke net survey we measured 253 bluegill sunfish. This number was obtained after 4 nights of sampling for a total effort of 16 net nights. Catch per effort for bluegill sunfish sampled was 15.8 bluegill sunfish per net night. Total length ranged from 2.9 to 7.7 inches with a mean of 5.4 inches. Bluegill greater than 6 inches total length, made up 28% of the total number of bluegill 3 inches or greater. Length frequency of the bluegill sunfish sampled is displayed in Figure 3. Bluegill sunfish were not collected during the April 26 electrofishing survey.

Figure 3. Length frequency of bluegill sunfish, 2013 fyke net survey, Ludden Lake, Iowa County



Channel catfish

During the fyke net survey we measured 105 channel catfish. Catch per effort for channel catfish sampled was 15.8 channel catfish per net night. Total length ranged from 3.9 to 27.0 inches with a mean of 18.6 inches. Channel catfish greater than 16 inches total length, made up 98% of the total number of channel catfish 11 inches or greater. Length frequency of the channel catfish sampled is displayed in Figure 4. Channel catfish were not collected during the electrofishing survey.

Channel catfish are not stocked annually. The most recent stocking of channel catfish occurred in 2007 when the Ludden Lake association purchased 450 small fingerlings. These fish probably represent the 17 – 22 inch fish present in the fishery. There is some limited natural reproduction occurring as noted by the 2-12 inch fish present in the survey.

Figure 4. Length frequency of channel catfish, 2013 fyke net survey, Ludden Lake, Iowa County